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The New IEEE Standard Dictionary of Electrical and Electronics Terms

[Including Abstracts of All Current IEEE Standards]

Fifth Edition

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Gediminas P. Kurpis, Chair

Christopher J. Booth, Editor

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transmission mode. A form of propagation along a transmission line characterized by the presence of any one of the elemental types of TE (transverse electric), TM (transverse magnetic), or TEM (transverse electromagnetic) waves. *Note:* Waveguide transmission modes are designated by integers (modal numbers) associated with the orthogonal functions used to describe the waveform. These integers are known as waveguide mode subscripts. They may be assigned from observations of the transverse field components of the wave and without reference to mathematics. A waveguide transmission mode is commonly described as a $TE_{m,n}$ or $TM_{m,n}$ mode, $_{m,n}$ being numerics according to the following system. *(A) (waves in rectangular waveguides).* If a single wave is transmitted in a rectangular waveguide, the field that is everywhere transverse may be resolved into two components, parallel to the wide and narrow walls respectively. In any transverse section, these components vary periodically with distance along a path parallel to one of the walls. m = the total number of half-period variations of either component of field along a path parallel to the wide walls. n = the total number of half-period variations of either component of field along a path parallel to the narrow walls. *(B) (waves in circular waveguides).* If a single wave is transmitted in a circular waveguide, the transverse field may be resolved into two components, radial and angular, respectively. These components vary periodically along a circular path concentric with the wall and vary in a manner related to the Bessel function of order m along a radius, where m the total number of full-period variations of either component of field along a circular path concentric with the wall. n = one more than the total number of reversals of sign of either component of field along a radial path. This system can be used only if the observed waveform is known to correspond to a single mode. *See:* **waveguide.** [119]

transmission-mode photocathode. A photocathode in which radiant flux incident on one side produces photoelectric emission from the opposite side. 398-1972

transmission modulation (storage tubes). Amplitude modulation of the reading-beam current as it passes through apertures in the storage surface, the degree of modulation being controlled by the charge pattern stored on that surface. *See:* **storage tube.** 158-1962w

transmission network. A group of interconnected transmission lines or feeders. *See:* **transmission line.** [10]

transmission performance (in telephony). The effectiveness of a complete telephone connection for transmitting and reproducing speech under actual conditions. *Note:* The specification of transmission generally requires the consideration of more than one attribute or test method. 823-1989

transmission primaries (color television). The set of three colorimetric primaries that, if used in a display and controlled linearly and individually by a corresponding set of three channel signals generated in the color television camera, would result in exact colorimetric rendition (over the gamut defined by the primaries) of the scene viewed by the camera. *Note:* Ideally the primaries used at the receiver display would be identical with the transmission primaries, but this is not usually possible since developments in display phosphors occurring since the setting of transmission standards, for example, may result in the use of receiver display primaries that differ from the transmission primaries. Within a linear part of the overall system, it is always possible to compensate for differences existing between transmission and display primaries by means of matrixing. Because of the capability afforded by matrixing, the transmission primaries need not be real. There exists a unique relationship between the chromaticity coordinates of the transmission primaries and the spectral taking characteristics used at the camera to generate the three respective channel signals. 201-1979w

transmission quality (mobile communication). The measure of the minimum usable speech-to-noise ratio, with reference to the number of correctly received words in a specified speech sequence. *See:* **mobile communication system.** [37]

transmission regulator (electric communication). A device that functions to maintain substantially constant transmission over a transmission system. [119]

transmission route. The route followed by a transmission circuit. *See:* **transmission line.** [10]

transmission system (1) (power operations). An interconnected group of electric transmission lines and associated equipment for the movement or transfer of electric energy in bulk between points of supply and points for delivery. 858-1987

(2) (data transmission). In communication practice, an assembly of elements capable of functioning together to transmit signal waves. 599-1985w

(3) (DQDB of a MAN). The interface and transmission medium through which peer physical layer entities transfer bits. 802.6-1990

transmission throughput. *See:* **speed of transmission, effective.**

transmission time (data transmission). The absolute time interval from transmission to reception of a signal. 599-1985w

transmission window. *See:* **spectral window.** 812-1984

transmissivity (fiber optics). The transmittance of a unit length of material, at a given wavelength, excluding the reflectance of the surfaces of the material; the intrinsic transmittance of the material, irrespective of other parameters such as the reflectances of the surfaces. No longer in common use. *See:* **transmittance.** 812-1984

transmissometer (illuminating engineering). A photometer for measuring transmittance. *Note:* Transmissometers may be visual or physical instruments. [126]

transmit (1) (computing machines). To move data from one location to another location. *See:* **transfer (2).** [20], [85]
(2) (token ring access method). The action of a station generating a frame, token, abort sequence, or fill and placing it on the medium to the next station. In use, this term contrasts with **repeat.** 802.5-1989
(2) (data management). To send data from one place for reception elsewhere. *See also:* **transfer.** 610.5-1990

transmit characteristic (telephony). The electrical output level of a telephone set as a function of the acoustic input level. The output is measured across a specified impedance connected to the telephone feed circuit, and the input is measured in free field at a specified location relative to the reference point of an artificial mouth. 269-1971w

transmit-receive cavity (radar). The resonant portion of a transmit-receive switch. 686-1982

transmit-receive cell (tube) (waveguide). A gas-filled waveguide cavity that acts as a short circuit when ionized but is transparent to low-power energy when un-ionized. It is used in a transmit-receive switch for protecting the receiver from the high power of the transmitter but is transparent to low-power signals received from the antenna. *See:* **waveguide.** [35]

transmit-receive switch (TR switch) (TR box). An automatic device employed in a radar for substantially preventing the transmitted energy from reaching the receiver but allowing the received energy to reach the receiver without appreciable loss. *See:* **radar.** [119]

transmit-receive switch, duplexer. A switch, frequently of the gas discharge type, employed when a common transmitting and receiving antenna is used, that automatically decouples the receiver from the antenna during the transmitting period. *See:* **navigation.** 686-1982, [42]

transmit-receive tube (TR tube). A gas-filled radio-frequency switching tube used to protect the receiver in pulsed radio-frequency systems. *See:* **gas tube.** 161-1971w

transmittal of a CCS message. *See:* **transmittal of a CCS signal.** 973-1990

transmittal of a CCS signal. Occurs when the signal or complete message becomes available for transmission (that is, stored in the output buffer). *Syn:* **transmittal of a CCS message.** 973-1990

transmittal of a per-trunk-signaling supervisory signal. Occurs when the state transition that begins the signal occurs at the M lead (or M-lead equivalent). 973-1990

transmittance (1) (fiber optics). The ratio of transmitted power to incident power. *Note:* In optics, frequently expressed as optical density or percent; in communications applications, generally expressed in decibels (dB). Formerly called "transmission." *See:* **antireflection coating; optical density; transmission loss.** 812-1984
(2) (photovoltaic power system). The fraction of radiation incident on an object that is transmitted through the object. *See:* **photovoltaic power system; solar cells.** [41]
(3) (transfer function) (linear passive networks). A response function for which the variables are measured at different ports (terminal pairs). 156-1960
(4) τ (laser-maser). The ratio of total transmitted radiant power to total incident radiant power. 586-1980w
(5) $\tau = \Phi_t/\Phi_i$ (of a medium) (illuminating engineering). The ratio of the transmitted flux to the incident flux. *Note:* It should be noted that transmittance refers to the ratio of flux emerging to flux incident; therefore; reflections at the surface as well as absorption within the material operate to reduce the transmittance. Transmittance is a function of: (A) geometry (i) of the incident flux (ii) of collection for the transmitted flux; (B) spectral distribution (i) characteristic of the incident flux (ii) weighting function for the collected flux; and (C) polarization (i) of the incident flux (ii) component defined for the collected flux. *Notes:* (1) Unless the state of polarization for the incident flux and the polarized component of the transmitted flux are stated, it shall be considered that the incident flux is unpolarized and that the total transmitted flux is evaluated. (2) Unless qualified by the term "spectral" (*see:* **spectral reflectance**) or other modifying adjectives, luminous transmittance (*See:* **luminous transmittance**) is meant. (3) If no qualifying geometric adjective is used, transmittance for hemispherical collection is meant. For other modifying adjectives see listing in reflectance factor entry. (4) In each case of conical incidence or collection, the solid angle is not restricted to a right circular cone, but may be of any cross section including rectangular, a ring, or a combination of two or more solid angles. (5) These concepts must be applied with care, if the area of the transmitting element is not large compared to its thickness,